

CURETTAGE OF THE UTERUS:

HISTORY, INDICATIONS, AND TECHNIQUE.

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CURETTAGE OF THE UTERUS.

It is now eighteen years since Dr James Carmichael communicated to this Society a paper by Dr Paul F. Mundé of New York on "The Dull Wire Curette in Gynecological Practice," and this paper was immediately followed by, and was, indeed, the direct cause of, one from the pen of the late Dr Keiller, on "Curettes and Curetting." Since that time no further communications on uterine curettage have been made to the Society; in fact, the matter has only been referred to incidentally in two or three papers devoted to other subjects. Yet there can be no doubt that in the eyes of the profession this operation occupies a very different position now from what it did nearly twenty years ago. The prophetic words of Dr Keiller have been largely fulfilled, for he said (in the communication above referred to) that he was "strongly impressed with the idea that curettes and curetting would become so fashionable amongst us that there might be a rushing after them;" but let us hope that the latter part of his prediction has not and never will come true, for he went on to say, "and that the already sorely-tried and long-suffering uterus might thereby be the reverse of improved."

It has, therefore, seemed to me that it may be both opportune and profitable for the Fellows of the Society now to record their estimate of the value of uterine curettage, and their views as to the kind of case most likely to be benefited by its performance. In order to further this end I shall give in the following pages a brief account of the history of the operation, along with a statement of the pelvic conditions in which it appears to be most clearly indicated, illustrated by instances occurring under my charge. I shall also describe the method of using the curette which has seemed to me the most convenient and the safest.

Personally, I have been familiar with the operation since 1881, when as a senior student I saw and assisted at cases in which it was carried out in the Edinburgh Royal Infirmary. During the first half of the period of fourteen years which has elapsed since then my notions regarding the technique of curetting and the conditions calling for its employment were largely founded upon what I was constantly seeing in Professor Simpson's private and hospital practice, and upon what I had witnessed of the operation

in the hands of the German gynecologists whom I visited in 1885; during the last seven years, however, my knowledge has been supplemented and in certain ways modified by the experience gained from the use of the curette amongst my own private and dispensary patients.

HISTORICAL NOTES.

The history of the uterine curette prior to 1878 has been summed up by Mundé in his paper referred to. In 1850 Récamier (1)¹ noted that metrorrhagia was sometimes caused by what were called intra-uterine fungosities, and in such cases advised the introduction of a sort of scoop with subacute edges into the uterus and the scraping of its interior therewith. Although correct in theory, Récamier's recommendation proved little short of disastrous in practice, for three cases of uterine perforation and death were soon reported,—a result which led, not unnaturally, to the almost universal condemnation of the curette not only in France, but also in Germany and England. Little was heard of the instrument for fifteen years, and then (1865) Dr J. Marion Sims showed to the Obstetrical Society of London the curette which still bears his name, venturing at the same time to characterise curetting as a practice "now recognised as legitimate" for removing intra-uterine fungoid granulations when productive of menorrhagia. He preceded the use of the instrument by the introduction of a sponge tent and by the digital palpation of the cavity of the uterus when cervical dilatation had been accomplished; he placed the patient in the left lateral semi-prone position and introduced his speculum; and before passing the curette he laid hold of and steadied the cervix with a tenaculum.

Notwithstanding Sims' statement that curetting was recognised as a legitimate procedure, Courty, writing a year later (1866), said that he had almost wholly discarded it on account of its danger; and for the next few years the text-books on gynecology continued to damn the curette with faint praise. Sims' countrymen had, however, given a warmer welcome to Récamier's instrument than the gynecologists of Europe, for we find Dr Noeggerath stating at a meeting of the New York Obstetrical Society in 1871 that he had used it twenty times with no unpleasant results, and without the previous introduction of the sponge tent, which he regarded as unnecessary and dangerous. Other speakers, however, at the same meeting reported cases of hysterical tetanus (with recovery), collapse (with death), and cellulitis following the use of the curette.

In 1872 Simon (3), in Germany, brought before the notice of the profession his spoon curette, an instrument which like Sims' was sharp, was made of steel, and was, therefore, inflexible. Simon, however, does not seem to have applied his sharp spoon to the

¹ The figures within parentheses refer to Literature at end of paper.

endometrium, for he spoke specially of its use for scraping out sarcomatous and cancerous growths in the cervix, rectum, and vagina; but Hegar and Kaltenbach and others did not hesitate to apply it to the interior of the uterus, and reported good results. To another American, T. G. Thomas (6), belongs the credit of having invented a curette less formidable than the above-named instruments, and equally efficacious in, at any rate, chronic hyperplastic endometritis. Thomas's curette, introduced in 1874, consists of a wooden handle carrying a flexible shank of soft copper wire with a loop at the end, by means of which intra-uterine granulations could be detached and removed. The instrument, however, cannot be said to have acquired a reputation outside the United States till 1878, when Dr Paul F. Mundé (7) brought it prominently before the notice of the profession in this country by means of his paper communicated to our Society, and gave to it an impetus into popularity by quoting Thomas's saying that he had used it "hundreds upon hundreds of times" without the least ill effect therefrom. In the discussion which followed the reading of Mundé's paper it was elicited that Professor Simpson had for many years been using Récamier's curette without bad effects, but always with previous dilatation of the os, and that Dr Keiller had also for a long time been curetting with a blunt instrument in some ways resembling that of Thomas, but with a strong feeling that the curette should "be handled at all times with the utmost caution."

This brings the history of uterine curetting up to the year 1878, when, to state the matter briefly, Récamier's, Sims', or Thomas's curette was used, and uterine hæmorrhage, whether due to fungous endometritis, to retained products of conception, or to sarcoma of the corpus uteri, was practically the sole therapeutic indication for the operation; for scraping the cancerous cervix with the curette could scarcely be called a special use of the instrument. The operation was often performed without an anæsthetic, in the medical man's consulting-room or at his dispensary, and with or without previous cervical dilatation. It should also be noted as significant that Mundé believed that the first and chief use of the curette was as a means of diagnosis.

Prior to 1878 about half a dozen communications devoted to the consideration of the uterine curette had appeared, and the instrument was mentioned in only one or two gynecological text-books. Since 1878 one hundred and fifty-three papers and monographs have been published dealing specially with curettage, and of these fifty-five have appeared in France, forty-seven in the United States, nineteen in Germany, eight each in Great Britain and Belgium, five in Italy, two each in Russia and Denmark, and one each in Spain, Norway, Switzerland, Roumania, Canada, Mexico, and Cuba. Further, the curette and its mode of use are now fully described in every gynecological treatise worthy the name. Of course this

even does not exhaust the literature of the subject, for many articles dealing with such subjects as endometritis, post-abortion septicaemia, and uterine neoplasms contain references, more or less direct, to curettage.

One of the first extensions in the use of the curette in the years immediately following the reading of Mundé's and Keiller's papers was in the direction of the treatment of intra-uterine septic conditions occurring two or three weeks after abortion, and with or without parametric or perimetric inflammation. To fit the curette for these purposes its stem was made hollow and a stream of antiseptic fluid was sent through it so as to wash away fragments of the endometrium as soon as they were detached. Thus the irrigation-curette came into existence, types of which are the instruments of M. B. Freund (16), of Rheinstaedter (21), of Noeggerath (24), Longyear (30), Auvard, Duke, and others.

About this time (1882-85) the question began to be raised whether curetting might not prevent future conception, or at any rate render it difficult. This idea, which was supported by B. Schultze, was controverted by the results obtained by Düvelius and Benicke (23). The last-named writer gave details of ten cases in which pregnancy occurred after curettage (for endometritis hæmorrhagica and retained membranes) at a period of from four weeks to seventeen months thereafter. The conclusion drawn was that curetting increased rather than diminished the chances of future conception, and this conclusion has since been repeatedly confirmed.

Between 1883 and 1885 Weckbecker-Sternefeld, Pick, and Plönies (25) began to report cases of puerperal endometritis with retained products of conception and signs of septic infection in which the sharp spoon was used, sometimes, although not always of course, with success. There were many who regarded the extension of the use of the curette to obstetric practice with no favour, and even at the present time there is by no means a general recognition of its value in puerperal septicaemia. About this time also the employment of the scoop in cases of cancer of the body of the uterus began to be much discussed, Terrillon (26) and others speaking in its favour, and Ménière (27) against it.

A paper by Smyly (31) on the curette in the diagnosis and treatment of diseases of the uterine mucous membrane, read before the Academy of Medicine in Ireland in 1886, led to some adverse criticism, one speaker stating that he regarded the instrument as a dangerous one, without diagnostic or therapeutic value. At this time there can be no doubt that in Great Britain the curette was not widely employed. It may be noted as a matter of some slight interest, that in 1887 Guinon dilated and curetted the uterus of a hysterical patient during the hypnotic trance. In the same year Geyl (39) reported a case of complete paralysis of the uterine muscle during curettage.

At one time it was hoped that in this instrument a useful means of palliative treatment for uterine fibroids might be forthcoming, and in 1888 H. C. Coe (46) wrote in support of this opinion; but, on the whole, later results have not confirmed the anticipations with which this extension in therapeutics was made. In the same year Desprèaux (47) considered the whole subject of curettage very fully in a thesis of Paris. Burt (43) reported one hundred and fifty cases without a death, but almost at the same time Jackson (44) had to put two fatalities on record.

In 1888, also, there were signs that a belief in the curette-treatment of puerperal endometritis was making headway, at any rate in America; both Coe and Earle stated that if the intra-uterine douche does not bring down a high temperature in the puerperium, then the curette should be brought into action. The question began about this time to come to the front, whether in such cases as the above in which there is fever and hypogastric tenderness, the existence of disease of the uterine appendages and even of the peritoneum should be regarded as a contraindication to curettage. During the last four or five years this matter has been warmly debated, and cannot yet be said to be definitely settled. The same remark applies to the use of the curette in the treatment of chronic and recurring tubal and peri-uterine inflammations; but such results as those obtained by W. M. Polk (104) hold out great hopes for the future. At the same time Bland Sutton and others deny that purulent collections in the tubes can ever spontaneously pass into the uterus.

It is unnecessary to pass in review the long list of papers, in many languages, which have during the last few years been devoted to the consideration of the curette; their full references will be found in the accompanying bibliography. Some of the recent extensions in the scope of the instrument will be specially referred to under the indications; but the papers of Bossi (132) and Werth (159) have an important bearing upon the *modus operandi* of curettage, and call for more than passing notice. These observers investigated the condition of the mucosa and its reproduction after the uterus had been scraped. Bossi was able to examine some uteri which had been removed by hysterectomy from twenty-five to twenty-seven days after curettage, and in them he found the endometrium histologically completely renewed. In one case in which the organ was removed fifteen days after scraping the mucosa was well reproduced, save in one or two places where the epithelium was defective. Clinically he found that the new endometrium was able to serve as the nidus for an ovum from twenty-five to twenty-nine days after the use of the curette, as was shown by seven cases in which conception occurred at this time; in these instances pregnancy and labour were normal. In experiments upon the lower animals (dogs) the mucosa was not so quickly renewed, probably because experimental curettage done

by sight was more thorough than uterine scraping in the human subject.

Werth's paper was also important, for it showed that in the case of uteri removed after curetting the endometrium was never entirely removed. Some areas, especially near the cornua, were often left untouched, whilst the anterior wall was usually well denuded; further, the depth of the mucosa removed varied very much. In the cases in which the curette did not penetrate to the muscular coat there was found a mucosa with glands opening on the free surface in from eight to ten days; but where the muscularis had been reached, even after the lapse of seventeen days there were still bare areas. New epithelium was observed as soon as the third day after curetting in some cases, and Werth believed that the glands were reproduced from the extremities left embedded in the muscularis mucosæ. These papers have a special value in enabling us to form some idea of the changes consequent upon curettage.

If we contrast the position of the curette now with that it occupied in 1878 we shall be struck with the great increase in popularity and extension in application which it has achieved in these eighteen years, as compared with its slow growth in favour during the twenty-eight preceding years. I believe I am right in saying that the curette is now scarcely ever employed without previous dilatation and anæsthetisation; that it is used in the hospital rather than in the dispensary, and with the patient in bed rather than on the consulting-room couch; that the sharp curette, flushing or not flushing, is the instrument of choice; that the operation is looked on as one requiring as much care, caution, and skill as any in minor gynecology; that in some cases it comes to have even the importance of a major operation; and that it is now as a therapeutic and not as a diagnostic agent that it has won its greatest triumphs and most widely extended its field of usefulness.

INDICATIONS.

It has doubtless been gathered from what has been said of the history of the curette, that the indications for the employment of this implement have greatly increased during the last few years. It is now more frequently used than it was some time back, and it is used in cases in which it would previously have been regarded as inappropriate and even as dangerous. These indications may be roughly divided into therapeutic and diagnostic, and under each of these headings are grouped conditions, obstetrical as well as gynecological, which call for the use of the curette.

Indications.

A. Therapeutic Uses.

I. Hæmorrhage.

a. Uterine.

1. Corporeal.
 - α.* Retained products of conception.
 - β.* Non-septic Endometritis.
 - γ.* Fibro-myomata.
 - δ.* Sarcomata and Carcinomata.
2. Cervical.
 - b.* Vaginal.
 - Carcinoma and Epithelioma.
- II. Septic and Infected States.
 - a.* Uterine.
 1. Acute Endometritis.
 - Septic or gonorrhœal.
 2. Chronic Endometritis.
 - b.* Annexial.
 - Pyosalpinx, etc.
- III. Dysmenorrhœa and Sterility.
- IV. Induction of Abortion.
- V. Preliminary to other Gynecological Operations.
- VI. Chronic Cystitis.
- B. Diagnostic Uses.

A. THERAPEUTIC USES.

I. IN HÆMORRHAGE FROM THE GENITAL ORGANS.—Hæmorrhage is one of the classical indications for the use of the curette; it is also the one about which there is the least difference of opinion. The bleeding may be uterine or vaginal in origin, and in the former case it may come from the body or from the cervix.

a. Uterine Hæmorrhage (Menorrhagia and Metrorrhagia).

1. Bleeding from the *body of the uterus* may be due, *first*, to retained products of conception; *second*, to endometritis without septic infection, but often with subinvolution and displacement; *third*, to fibro-myomata; and, *fourth*, to malignant uterine growths. Let us look at these various conditions as indications for uterine curettage.

a. Retained Products of Conception.—Very frequently after an abortion, and especially after one which has not been under the care of a medical practitioner, a portion of the decidual or foetal membranes is left behind *in utero*. The derelict tissue need not be large in size to cause bleeding; in fact, an apparently insignificant portion may suffice to set up and maintain excessive hæmorrhage. There may be no signs of infective processes in the uterus, indeed, I am dealing now with the cases in which these are absent; yet the uterine bleeding will continue, the patient's strength will become exhausted and her health vitiated, and a morbid uterine mucous membrane will be developed unless the uterus is promptly

relieved of its offending contents. In cases in which the abortion is a recent matter it will often be found that the cervical canal is still sufficiently open to admit the finger, and the uterus may be easily and effectively cleared out under chloroform. In such an emergency the finger is the best curette, it being always borne in mind that as strict antiseptic precautions must be taken as if the curette itself were being used. I am not, therefore, an advocate for the management of all cases of abortion with the curette; but in cases of habitual abortion, in which there is reason to believe that an unhealthy uterine mucosa is the cause, it is distinctly indicated. In the instance, however, in which several days or some weeks have elapsed since the abortion occurred, preliminary dilatation of the cervix will be needed, and something more thorough than a mere digital scraping of the uterine interior must be done, for by this time the decidual fragment has probably become firmly attached, and a new and doubtless an abnormally vascular uterine mucosa has been or is being formed. Such is a suitable case for curetting, and in illustration the following instance may be cited.

Illustrative Case.

Case of Mrs A. Retained Products of Conception: Curettage.—Mrs A., a recently married woman, 25 years of age, aborted at the third month of her first pregnancy (March 23, 1895). Considerable hæmorrhage occurred, and the ovum was expelled in fragments. Some bleeding continued till the 4th of April; thereafter the patient seemed well till the 13th of the same month, when, after a good deal of walking, hæmorrhage recurred in a rather alarming gush. This continued to occur at intervals of a few days, and I was consulted about the case on April 30. It was evidently a case of retained products of conception without (for the present) any signs of sepsis, so I curetted the uterus on May 1. The patient was anæsthetised, and the cervical canal dilated with Hegar's cones in the usual way. Some fragments of decidual membrane were brought away with the curette; the interior of the uterus was washed out and then cauterised with iodised phenol; and an intra-uterine plug of iodoform gauze was inserted. No further hæmorrhage took place, and the patient made a good recovery. She had a very profuse discharge at her next menstrual period, which gave her some alarm. This is a phenomenon which is not infrequently met with after curettage; I do not pretend to explain it. All the succeeding periods have been perfectly normal.

β. Non-septic Endometritis.—It was for the purpose of removing from the uterine cavity what were known as fungosities that Récamier originally introduced the curette, and in meeting this indication the instrument may, at the present day, be said fully to maintain its reputation. It is now recognised that these fungosities are associated with and dependent upon chronic endometritis,

—that they are, in fact, the hypertrophied uterine mucosa, and that the organ in which they are found is commonly displaced, and is nearly always in a state of subinvolution. The condition is frequently met with; it may originally have been set up by a labour or a miscarriage, or it may have taken origin in any of the ways that chronic endometritis does; it may persist for a long time, showing usually a steady tendency to increased severity in its manifestations; it brings with it menorrhagia, metrorrhagia, leucorrhœa, sacralgia, anæmia, and general depreciation in health, and it entails sterility; the uterus is large (sound passes in from 3 to $4\frac{1}{2}$ inches), tender, and often displaced; and the morbid state shows no natural tendency to cure, but rapidly becomes normal after the cavity of the organ has been thoroughly curetted and cauterised. The following case may be cited as a type of this use of the curette.

Illustrative Case.

Mrs B., aged 32 years, came to me for advice in the early part of January 1895. She was married, and had three children, of whom the youngest, a boy, was 8 years old. She had been in bad health ever since the birth of this child eight years ago, and had recently been getting worse. She complained of excessive menstrual loss, the discharge lasting for fully seven days; recently the periods had been occurring every three weeks. There was no acute pain at the monthly epoch, but rather a dragging sensation in the pelvis, which lasted for a week after the flow had ceased. There was a good deal of leucorrhœa in the intermenstrual period. Recently she had been showing signs of anæmia—breathlessness, palpitation, etc.—had to a large extent lost her appetite, and had developed troublesome constipation.

Physical examination showed that the lungs and kidneys were sound; there were anæmic bruits to be heard over the base of the heart, but no signs of organic disease; and there were all the manifestations of a chronic dyspepsia. The vaginal and bimanual examination revealed a large, slightly sensitive, freely movable uterus, situated rather low down in the pelvis, but not otherwise out of position. The uterine sound entered to a distance of $3\frac{3}{4}$ inches, its passage gave a little pain, and its tip was seen to be blood-stained when it was withdrawn. With the sound in position it could be felt that the uterine walls were thicker than normal. The uterine appendages showed no signs of disease, neither was there sharp pain on pressure in the lateral parts of the pelvis. Perineum was intact.

The diagnosis of hyperplastic endometritis of a chronic kind was made, and it was concluded that the morbid process had begun eight years previously in the puerperium following the birth of the youngest child. At any rate she had then been kept in bed for several weeks by her medical attendant for “inflammation.”

There was no sign of annexial disease, and the case was therefore evidently a most suitable one for curettage. (Medicinal means and vaginal douching had been tried without effect.) A sharp attack of influenza caused the postponement of the operation till April 8, when it was performed on the day following the cessation of the menstrual flow. The preparations for the curetting were the usual ones, and the operation itself had no feature of special interest. The scraping removed a thickened and vascular mucosa; iodised phenol was applied to the emptied cavity; and an intra-uterine packing of iodoform gauze was inserted, which was removed three days later. There was some pain in the back for twenty-four hours, but after that recovery was uninterrupted, and the patient was able to go to the country for a change in a little more than a fortnight. Her menstrual flow came on in May, lasted only three days, with a slight return on the sixth day from over-exertion, and was moderate in quantity. "The first time she had had a natural period for seven or eight years" was what she told me. Since then she has been in the enjoyment of perfect health, although she has not again become pregnant. The uterus is now of normal size, and occupies a healthy position in the pelvis.

Even in cases in which the endometrium does not show the polypose growths which are so characteristic of this type of chronic inflammation, curettage is still indicated if the symptoms which call for it (*viz.*, hæmorrhage, leucorrhœa, backache, etc.) are present in sufficient severity. Of course, it is practically impossible to separate these from what are called the "chronic infected cases," in which an old septic or gonorrhœal infection has been the *origo mali*, but in which the virulence of the process has passed off. The separation is, however, unnecessary, as the same treatment may be meted out to both.

γ. *Uterine Fibromyomata*.—There is at present no very strong feeling in favour of the use of the curette in uterine fibroids. In certain cases the uterine mucosa has been found in a hyperplastic state, and has even shown fungosities when myomata were present; but the observations of Oscar Semb ("Ueber das Verhalten der Uterusschleimhaut bei Myomen," *Arch. f. Gynæk.*, xliii. p. 200, 1893) have shown that in most instances the hæmorrhage is due to hypertrophy and congestion of the muscular rather than of the mucous coat; indeed, in some cases there was actually an atrophic endometritis. When the curette is employed it is difficult to see how it can effect more than a temporary benefit, and if the endometrium be atrophic it will not even act as a palliative. A few cases are on record in which involution followed curettage, but in them there was no myoma. Nevertheless, Orloff (128), working in Professor Lebedeff's Clinic, has found good results in ten cases in which the uterus was curetted for myomata of the interstitial type. In all the instances, save one, the tumour was single, and in all the leading symptom was hæmorrhage, not pain. Tincture of

iodine was applied to the interior of the uterus after curetting. The results were diminution in the size of the tumour, decrease in the length of the uterus, disappearance of the metrorrhagia, and a return of the regular menses during a period varying from six months to one year. Orloff was of opinion that curettage was indicated when the patient was too weak from blood loss to undergo a major operation, or when she was not far from the climacteric; it might also be of service as a preliminary to further surgical interference. Whether or not curettage may act as a valuable palliative in some classes of uterine myomata is not yet certain; but it is obvious that it is not applicable in all.

δ. *Uterine Sarcomata and Carcinomata*.—Apart from its use as a diagnostic means in malignant growths of the corpus uteri, the curette is here of little value. The only treatment that presents a fair chance of success is hysterectomy, preferably per vaginam, performed early. If it be too late to hope for any success from extirpation of the uterus, then the patient's sufferings and misery may be lessened by curettage of the organ, followed by free cauterisation. In cases of sarcoma uteri where this has been done I have seen the patient's state greatly improved; but, of course, the relief was quite transient, and it was scarcely possible to think that life was prolonged.

2. Bleeding from the *cervix uteri* is an occasional indication for the sharp spoon; the condition calling for it is nearly always cancer, and what has been said regarding its use in sarcoma of the body of the organ may be repeated here. The curettage is at best a palliative, although it has been known to be followed by a respite of even two or three years; but it is worth doing if it only serves to diminish the hæmorrhage, and to stop for a time the systemic infection from the breaking-down of cervical tissues. A curette with serrated edges has been specially recommended for this purpose; great care must be taken not to invade neighbouring organs, and the scraping should be followed by free application of the Paquelin cautery at a dull red heat.

b. *Vaginal Hæmorrhage*.—Vaginal carcinoma and epithelioma, secondary or very rarely primary in character, may, on account of hæmorrhage and other discharges, call for the use of the curette; but this instrument must be employed with the greatest caution, and, of course, it is with a view to palliation only that it is recommended.

II.—IN SEPTIC AND OTHER INFECTED CONDITIONS OF THE GENITAL ORGANS.—Nearly all the text-books of gynecology which are more than half a dozen years old, and not a few of the much more recent ones, place sepsis as a danger resulting from and not as an indication calling for the use of the uterine curette. In fact, it is barely two years since Berry Hart, in a fresh and eminently suggestive paper on the classification of gynecological diseases, read before this

Society, stated, in reference to chronic infected cases, that he had seen cellulitic thickenings disappear after curetting. Hart then went on to say: "This heresy, as one may almost call it, is truth, I believe; but it is strong meat, and liable to be abused by the inexperienced." It can scarcely be called heterodox now, and if it be strong meat, still there can be no doubt it is a pabulum eagerly sought after, and assimilated more or less perfectly by even the tyro. A glance over the titles of articles in medical journals all over the world demonstrates this fully.

Now, the change in the views of the profession has not come about through want of appreciation of the danger of sepsis entailed by the use of the curette. Not at all. We still regard the curettage of the uterus as an operation not free of risk, but we take care to minimise its dangers by strict antisepsis; we no longer perform it in our consulting-rooms; and we hedge its performance round with the greatest care and forethought. What has happened is this. We have gradually come to learn that nearly all, if not all, the septic and infected conditions of the genital organs spring from micro-organismal infection of the endometrium, either primarily, or secondarily from vaginal infection. The streptococcus or the gonococcus obtains a lodgment in the uterus, and endometritis is set up; sooner or later, and more commonly soon than late, the infection spreads to the tubes, and having reached them it does not take long to pass through their fimbriated extremities into the peritoneal cavity; virulent peritonitis, and, secondarily, suppurative cellulitis are thus set up. All these processes—septic or specific endometritis, salpingitis, pyosalpinx, ovarian abscess, peritonitis, and cellulitis—are simply links in a chain of pathological results. If we can prevent the forging of the utero-tubal link we stop the formation of the chain effectually. This I believe we can do; I have seen it done; I have done it myself both in acute and chronic sepsis.

In a discussion (118) on curetting the puerperal uterus, in the Chicago Gynecological Society, Dr Charles Warrington Earle said: "I believe that curetting a uterus after delivery at full term involves more responsibility than an ordinary and uncomplicated laparotomy." So it does. I agree with Dr Earle; *but* when I prepare to curette the puerperal uterus I am face to face with dangers to life infinitely more pressing than those that meet the man who is about to perform "an ordinary and uncomplicated laparotomy." Such a laparotomy is undertaken commonly for conditions which would not immediately terminate fatally, whilst the occasion of the curettage is a puerperal septicæmia, and everyone knows that that means, in the vast majority of cases, either immediate death or lifelong misery from pelvic abscesses, adhesions, and chronic invalidism.

Under the head of septic and infected states there are several separate groups of conditions in which curetting may be employed.

With regard to some of these there is still some doubt in the mind of the profession as to the justifiability of the operation; possibly some medical men would consider it as contraindicated in them all.

a. Uterine infected states (Endometritis septica, etc.).—Of the uterine infected states which may require curettage, should other and milder measures fail, the most important is undoubtedly septic endometritis, acute or chronic.

1. *Acute*.—Most commonly acute septic endometritis is due to infection after abortion; it may also be post-operative, and be caused by neglect of antiseptic precautions in minor gynecological operations. There is a rigor, a high temperature, rapid pulse, pain over the uterus, and a purulent discharge from the cervix. Curettage is here indicated, and I believe the indication holds even if the Fallopian tubes have become involved. It ought to be thorough, and it should be followed by a complete packing of the uterus with iodoform gauze. Further, great care should be taken when the dressing is renewed, for the risk of reinfection is large. Septic infection may also follow labour at the full term, especially if there has been hæmorrhage, retention of a fragment of placenta or membranes, or a pre-existing state of unilateral pyosalpinx. Should one curette such a puerperal uterus? I believe one should if an intra-uterine douche, followed by iodoform gauze packing, fail to bring down the temperature. The following case will serve as a type of this group of indications.

Illustrative Case.

Mrs C., aged 30 years, v.-para, was confined on the morning of December 14, 1895. Her first child had been delivered still-born with instruments; her second had also required forceps, but was still living. She has twice aborted. During this (her fifth) pregnancy she had been troubled with a vaginal discharge,—in fact, she has had this since before her marriage. Dr John Stevens, her medical attendant, reported that in the labour the head presented in the R.O.P. position; rotation occurred naturally, and the child was born alive without forceps. There was a severe hæmorrhage in the third stage, and the patient was much collapsed. She fainted and was unconscious for about an hour, but was revived by stimulants and ether hypodermically. The placenta and membranes seemed intact, but, naturally, they had to be removed very quickly from the uterus on account of the hæmorrhage. This was on the morning of December 14; in the evening the temperature was $102^{\circ}6$, and the pulse 130. On the morning of the 15th the temperature was normal, and the pulse 96; in the evening, however, it was $103^{\circ}4$, and later $104^{\circ}5$, whilst the pulse was 104 and 124. She got a vaginal douche. Next day (16th) the morning temperature was $98^{\circ}4$, and the pulse 89; but again in the afternoon it rose to $103^{\circ}6$, and the pulse to 118. She was douched

thrice. On the fourth day of the puerperium (December 17) the morning temperature was 104° (pulse, 107); at 2 P.M. it was $103^{\circ}5$, and an intra-uterine douche was given; at 8 P.M. it was $103^{\circ}8$, and the patient was much exhausted. At this time Dr Stevens asked me to see the case with him. I found the patient very weak, with a temperature of 104° , and a pulse of 125; there was great tenderness over the uterus; there was scarcely any lochial discharge, but what came away was distinctly offensive. The vagina was hot and dry, and the uterus was very painful to touch. There was no cause for the high temperature in the lungs or breasts, and the diagnosis of acute septic infection from the uterus was made. After consultation we determined to try the effect of curetting, although the weak state of the patient did not hold out much promise of success. So at 11 P.M. she was anæsthetised and the external genitals and vagina thoroughly cleansed. One or two of the larger sizes of Hegar's dilators were introduced into the uterus, and I then passed in my finger, but could feel no pieces of membrane or placenta. Since, however, my finger failed to reach the fundus,—and I may here interpolate that the cervix was fixed and could not be dragged down in the vagina,—I now introduced the sharp curette (Récamier's), and succeeded in bringing away from one of the upper angles of the uterus a few shreds of particularly malodorous membranes. The uterine cavity was then thoroughly douched out (perchloride of mercury 1 to 5000) and packed with iodoform gauze. The vagina was also packed. The patient stood the chloroform well, but was a little faint after the curetting. She, however, stated that she felt easier. The temperature at midnight was 101° , and the pulse 95, and affairs remained in very much this condition till next morning, when the thermometer registered $101^{\circ}8$, and the pulse-rate was 93. Respirations were 30. In the afternoon (December 18) I saw her again with Dr Stevens. The temperature, which at 2 P.M. had been $104^{\circ}8$, was down again at 5 P.M. to $102^{\circ}8$. The iodoform plug had been renewed, and a vaginal douche given. The urine had to be drawn off with the catheter. There was intense vaginal tenderness, but less abdominal pain. The breasts were giving rise to some trouble, so they were bandaged, and belladonna ointment was applied. A teaspoonful of the sulphate of magnesia was given every hour till the bowels had moved freely some five or six times; but there was still a large amount of abdominal flatulence and some tympanitis.

It would be tedious to state in detail the events of the next five or six days. The packing was changed twice daily, and always came away soaked in purulent discharge; the urine had always to be drawn off; and the temperature varied in an erratic way from 103° to $100^{\circ}5$, falling on December 22 (ninth day of puerperium) to $99^{\circ}9$, rising again to 104° the same evening, and for the first time touching normal on December 24, when, also, the pulse was 71 and the respirations 24. A gradual improvement in the

abdominal condition took place, the appetite improved as the tongue slowly cleaned, and on December 23 the patient began to be more hopeful about herself. About this date also the discharge ceased to be offensive, and douching was stopped. On the evening of the 24th, however, the temperature suddenly shot up to $104^{\circ}8$, and there was some pain in the left hand and wrist; the bowels had not moved all day. This was only a temporary relapse, and since the 25th the temperature, pulse, and respirations have been normal, and the patient has been able to pass water. She is now (January 7) apparently quite convalescent; but a vaginal and bimanual examination reveals the thickening in the left broad ligament and the fixing of the cervix which have been present throughout the whole illness, and which were probably there before she became pregnant.

I am well aware that the line of treatment followed in the preceding case may be open to objections. Dumont (140) and many others have recently insisted strongly on the many dangers in connexion with the curettage of the puerperal uterus from perforation of the softened uterine wall, from the lighting up of slumbering annexial lesions, etc.; but in the case above recorded we were face to face with a condition already so grave that of the two kinds of treatment which were still untried, abdominal section and curetting, we unhesitatingly adopted the latter. Certainly the pieces of membrane could not have been removed in any way but by the curette.

What has been said regarding acute septic endometritis applies also to gonorrhœal endometritis, although it is true that systemic infection is not so severe in this type. The gonococci, however, soon invade the tubal mucosa and set up salpingitis and all the ills that follow in its wake, and, therefore, curettage is indicated, with all the more hope of success for the reasons that the micro-organisms are commonly found in the superficial layers of the uterine mucous membrane, and that further invasion takes place through the tubes and not the lymphatics.

2. *Chronic*.—It is probable that under the head of chronic infected states of the uterus ought to be placed many of the cases of so-called simple chronic endometritis. The uterus is enlarged, menstruation is disordered, there is purulent leucorrhœa, and sometimes pus is discharged in a gush; there is frequently uterine displacement, there is some pain over the uterus, but a down-bearing feeling is more common; there is often some thickening or adhesions on one or both sides of the pelvis; and the patient usually refers her sufferings back to a post-abortion or post-partum period, or to the results of gonorrhœal infection, and states that she has been sterile since then. Not infrequently the cervix is enlarged, and protruding from the os are one or more mucous polypi. The symptoms I have named were all present in the case of Mrs D., which I may here take as my type.

Illustrative Case.

Mrs D., aged 34 years, was first seen by me on April 24, 1895. Seven years ago she was instrumentally delivered of a dead-born child. This was her first and only pregnancy. She suffered from abdominal pain and tenderness after the labour, and seems at that time to have had acute endometritis, followed by pelvic peritonitis. Her recovery was slow, and since that time she has had persistent severe dysmenorrhœa, and has never again become pregnant. Various palliative means of treatment had been tried without success, and on account of the intensity of her sufferings the patient had needed powerful narcotics at the menstrual periods. The pain then was agonizing; it came on regularly every month, and the flow was moderate in quantity, and it was worst on the first day before the discharge was fairly established. For this day, and frequently also for the one following, she had to keep her bed, and hot abdominal applications, as well as morphia suppositories, were needed. Sometimes an enema gave temporary relief, sometimes it did not. The pain was spasmodic in character, and was quite different from the constant dull, aching pain which was present in the intermenstrual period. I saw her in one of her worst attacks, and can vouch for the intensity of her menstrual suffering. She was also much troubled with leucorrhœa, which was generally worst when the pain was easier. Once or twice a purulent discharge had occurred in a gush from the passage. But for the uterine trouble she was in the enjoyment of good health, although she had had one or two serious illnesses.

Vaginal and bimanual examination revealed an enlarged uterus lying obliquely in the pelvis, with its fundus to the right and the cervix to the left side. The sound could only be passed with great difficulty and with some pain; it entered for a distance of about 3 inches. Two mucous polypi could be felt projecting from the cervix, which pointed to the front and left side. The uterus as a whole was retroposed as well as lateroverted, and it was firmly fixed in position. There was distinct thickening in the position of the left broad ligament, and the patient complained of pain on pressure over the left iliac region. The left Fallopian tube felt large, and the utero-sacral ligaments stood out distinctly at the borders of the posterior fornix.

As all sorts of palliative means had already been tried, I made up mind to remove, in the first instance, the mucous polypi, then to dilate and straighten the cervix, and thereafter to curette if the condition indicated it. Accordingly, on May 4, 1895, being a few days after a menstrual epoch, the patient was anæsthetised, the vagina and genitals very carefully cleansed and disinfected, and the polypi twisted off. I encountered great difficulty in the dilatation of the cervical canal, partly on account of its narrowness and partly on account of its obliquity and of the fixed position of

the cervix in the vaginal vault; but at length, by beginning with a No. 2 Hegar and proceeding very cautiously and deliberately, the cervix was opened up to the extent of admitting the forefinger. To the touch the uterine mucosa felt thick and slightly irregular, so the interior was scraped with the sharp curette, was cauterised with iodised phenol, and plugged with an iodoform gauze drain. The after-treatment was the same as usual; and with the exception of a rise of 1 degree of temperature on the night of the operation, and a little difficulty in passing water for twenty-four hours, the recovery was uninterrupted. At her next monthly period the patient, instead of having about twenty-four hours of acute agony, had three short and sharp attacks of pain, each lasting about an hour. This experience, she said, was a great improvement on the past. At the next period she had scarcely any sharp pain, only the dull, aching sensations that she always has in the pelvis. Since then even the latter kind of pain has gone, and she is practically quite well as regards the pelvic organs. Examination still shows some thickening in the left broad ligament, but the uterus is now much less fixed in position than before the operation. It may be mentioned that during the month following the operation there was copious leucorrhœa; this has now ceased.

b. Infected states of the Appendages.—I am well aware that I am treading on dangerous ground when I speak of curettage for disease of the Fallopian tubes, and I have not yet deliberately curetted a uterus with the intention of draining pus-containing tubes. The operation is still *sub judice*; in fact, there are some who would regard disease of the appendages as an absolute contra-indication to curetting even for simple uterine hæmorrhage. Whilst not sharing in the view of these gynecologists, I find it difficult to see how pus-containing tubes can be drained through the uterus, for this of course is the rationale of curettage in such cases; and my reason for thinking so is that in the observations on a considerable number of diseased Fallopian tubes which I made in conjunction with Dr J. D. Williams some time ago, the uterine orifice of the tube was invariably found blocked in hydro-, hæmato-, and pyo-salpinx. Still, certain cases which have been reported make one pause before making any definite statement on this point. Thus Liell (147) has recently (February 1895) given the details of a case in which a double pyosalpinx evacuated through the uterus; laparotomy, which had been meditated, was abandoned, and curettage was performed instead; pregnancy occurred two years later, and the patient was safely delivered of a living child at the full term. Without instancing such a striking case as the above, W. M. Polk (104) has also brought forward a good deal of evidence to show that before performing laparotomy for recurrent salpingitis and peritonitis, it is well to give the patient a chance of the benefits that may and sometimes do follow curetting. Even if the operation fail the woman is in a better state to undergo

laparotomy. Polk does not seem to be so sanguine as to expect any improvement to follow curetting when there is an abscess in the ovary as well as pus in the tube. Whether or not subsequent events confirm the teaching of Polk and others, their practice has done some good in checking the wholesale invasion of the pelvis by abdominal section, and in turning again the minds of gynecologists to more conservative methods.

III. DYSMENORRHOEA AND STERILITY. — In a third group of indications for curettage I have placed certain kinds of dysmenorrhœa; but to some extent these have been already referred to under the head of endometritis and chronic infected cases. Of course every case of menstrual pain or of sterility, primary or acquired, is not a suitable one for the curette. It is doubtful whether uterine scraping is of the slightest avail in cases of mal-development of the uterus, and it certainly can do little, if any, good when the dysmenorrhœa is due to rheumatism or gout. But in membranous dysmenorrhœa it is clearly indicated; in fact, repeated uterine curettings offer probably the only real chance of cure. Then, again, in the cases of one-child sterility, where the uterus is enlarged and displaced, and in which there is great menstrual pain and leucorrhœa (as in Mrs D.'s case), curettage may make conception possible, or at any rate may diminish the dysmenorrhœa. Of course I should in such instances try other means of treatment first, such as ichthyol tampons and hot vaginal douches; but before removing the appendages in the dysmenorrhœa cases, and before subjecting sterile patients to a long course of treatment with pessaries (intra-uterine or vaginal) it seems to me to be fair, in properly chosen cases, to give curettage a chance. Possibly the accompanying cervical dilatation and the straightening of the uterus may be as powerful factors in the improvement as the curette; but it is certain that peri-uterine thickenings and adhesions do disappear in some of these cases. At any rate Travis Gibb (*Amer. Journ. Obst.*, xxxii. p. 257, 1895) reports sixteen successes out of twenty-six cases in which this treatment was adopted for sterility; in four of these also it is worthy of note that there were unmistakable evidences of tubal inflammation on one or both sides.

IV. DANGEROUS STATES IN PREGNANCY CALLING FOR THE INDUCTION OF ABORTION.—It must always be a very responsible matter to decide upon the induction of abortion, and one which requires consultation with a brother practitioner; but when, for such a condition as incoercible vomiting in pregnancy which is threatening to become speedily fatal, it has been decided to empty the uterus, then cervical dilatation followed by curettagc meets the requirements of the case admirably. Probably the dull curette is better for this purpose than the sharp. The operation is both rapid and effective, and in these characters it compares favourably

with other methods of inducing abortion in cases where the patient is so weak that every drop of blood is of value and every minute of importance. Of course it is only applicable before the end of the third month of pregnancy. Admirable papers on this indication for the curette are those of Puech (155) and Blanc (110) in France, and of Caruso (121) in Italy.

V. PROPHYLACTIC OR PRELIMINARY PROCEDURE IN CONNEXION WITH MAJOR OR MINOR GYNECOLOGICAL OPERATIONS.—The employment of curettage as a preliminary to other operative procedures on the genital organs is by many regarded as novel; but I saw it in operation in Berlin in 1885. In all plastic operations on the vagina, such as colporrhaphy, perineorrhaphy, repair of the cervix or of a fistula, or amputation of the cervix, it will manifestly be an advantage if we can be sure that no source of infection lies above the seat of surgical interference. So long, however, as there is a state of endometritis, and especially if there be a purulent discharge from the cervix, there will be a great risk of failure of healing by first intention, it may be of breaking down of union altogether. Especially does this apply to the cases of perineorrhaphy for prolapsus uteri, in which that organ is most often in a state of chronic endometritis. The curettage should be done about a week before the plastic operation, and the uterus and vagina packed with iodoform gauze.

Curettage is also recommended and employed before hysterectomy (vaginal or abdominal) for malignant disease or for fibroid growths, and then its prophylactic and diagnostic uses can be combined. Even in cases of laparotomy for acute peri-uterine suppuration, Krug (100) and Pryor (105) have found that the uterus may be safely curetted before the major operation, and that the procedure greatly increases the patient's chances of recovery. Pryor (105), indeed, thinks that most of the distress following laparotomy is due to the neglected endometritis and not to adhesions, a secondary pyosalpinx being set up in the tube left in cases of unilateral salpingo-oöphorectomy. Here a note of warning is necessary, and I may give it in Krug's own words: he "believes that the tyro is no more entitled to attempt the preliminary procedure than he is to do the final laparotomy in such difficult and complicated cases." I may refer here, in passing, to Bovée's case (134) in which curettage was performed as a preliminary to laparotomy for ruptured tubal pregnancy; the patient recovered. It has also been used before hysteropexy for displacement.

VI. CHRONIC CYSTITIS.—It remains to be stated that a possible therapeutic indication for the curette in gynecological practice is to be found in certain intractable cases of chronic cystitis. Under these circumstances, ordinary means of treatment having, of course, been tried and having failed, the medical man is left with only

such troublesome expedients open to him as dilatation of the urethra or the making of an artificial vesico-vaginal fistula. In such instances Dr J. Verhoogen of Brussels (118A) has advised and practised vesical curettage. In four cases of chronic cystitis he reports a cure, and in three of tubercular cystitis, amelioration; but with regard to this use of the curette I have no personal experience to go upon.

B. DIAGNOSTIC USES.

A few words will suffice for all that I have to say regarding the diagnostic uses of the curette. The instrument may be passed into the interior of the uterus, and a fragment of the tissue removed and examined microscopically. In this way the distinction may be made, or confirmed, between endometritis, carcinoma, myoma, and possibly also sarcoma of the uterine body.

During recent years the justifiability of curetting in order to diagnose extra-uterine pregnancy has been called in question. What practice one follows in this matter depends entirely upon what one does with the passage of the sound in like circumstances. If the one instrument may be used, so may the other. J. C. Webster,¹ however, has shown that whilst the presence of decidual tissue is sufficient along with other signs to establish a diagnosis, its absence does not exclude ectopic pregnancy, for the mucosa may have been previously expelled.

DANGERS.

That the use of the uterine curette is accompanied by several dangers cannot be gainsaid; but that with care, and above all with antiseptic precautions, these dangers can be enormously diminished is also undoubted. Further, certain of the risks are certainly as much due to the dilatation and to the intra-uterine cauterisation and douching which accompany the curettage as to the use of the curette itself. Again, in certain cases of uterine perforation ascribed to curettage it would seem that the real cause was the *forceps* introduced to remove fragments of tissue. Whilst we must not minimise the risks of curetting, we must not at the same time exaggerate them. What the dangers really are may be shortly enumerated.

1. *Abortion*.—That the curette will, just like the uterine sound, be occasionally unwittingly introduced into the pregnant uterus by mistake must be admitted. A careful inquiry into the menstrual history, combined with a thorough bimanual examination prior to curetting, will usually prevent the occurrence of this accident. It may be said that in certain cases there is a red discharge from the uterus which prevents the patient's history giving

¹ Webster (J. C.), *Ectopic Pregnancy*, p. 195, 1895.

us the clue. This is true, but in such instances the discharge probably points to a very abnormal state of intra-uterine affairs.

2. *Sepsis*.—Sepsis used to be a not infrequent result of curetting in the days when the operation was preceded by slow dilatation accomplished by a sponge tent,¹ when the procedure itself was carried out in the consulting-room and dispensary, and when the need for the strictest antisepsis was not recognised. By regarding curettage as an operation requiring as great care as any other in gynecology, by preparing the patient before curetting, and by seeing that every antiseptic precaution is taken during it, we can render septic infection from it almost unheard of. In the hands of good operators it must now be a very rare accident.

3. Among the rarer dangers of curettage is the *obliteration of the cavity of the uterus* thereafter. An extraordinary case of this kind is reported by Fritsch (125), in which, in a puerperal patient of 25 years, curettage for hæmorrhage was followed by a period of two years during which no menstrual flow occurred. At the end of this time an infantile uterus was discovered without the slightest trace of a cavity. Veit (157) reports a similar case in 1895 after an abortion, and Otto Küstner (145) one of partial uterine obliteration. It would appear that too energetic curettage in a puerperal uterus may set up or exaggerate the process of involution so as to bring about superinvolution with disappearance of the cavity in the viscus. It will, therefore, be well to deal lightly with the post-partum or post-abortion organ. At the same time the risk cannot be great, for the number of recorded cases is exceedingly small.

4. *Rupture of purulent collections in the pelvis* is a real danger in curetting, and it is for this reason that many would still forbid the operation when there is tubal or peritoneal mischief. At the same time the risk has, I think, been exaggerated, and with *chronic* annexial inflammations there is not much risk. Of course when there is known to be a pyosalpinx the question of curettage, done even in the most careful fashion and by the most reliable of operators, must be a matter for very grave investigation. It must be remembered that under the circumstances we are choosing between laparotomy, vaginal removal of the suppurating appendages, and curetting, and that should rupture occur during the last-named procedure we must be ready to do one of the others.

5. *Perforation of the uterine wall*.—Without agreeing with those who regard perforation of the uterus with the curette as a necessarily fatal accident, it is well not to go to the opposite extreme of thinking it a harmless incident. That this traumatism occasionally occurs is not to be wondered at when one remembers the enormous number of curettings that are now done, and the

¹ F. Barnes (130) at the present time uses the laminaria tent, and holds that "it is itself aseptic, and even antiseptic, by reason of the chlorides, bromides, and iodides with which it is impregnated by the sea water in which it grew."

likelihood that in some of the cases there will be a uterus with a wall that is unusually friable or abnormally thin. It is said to be common in the puerperal uterus. In estimating the danger of perforation it ought to be borne in mind that in several of the cases of curetting in which this accident is reported, *e.g.*, those of Alberti (119), Veit, Gusserow, Orthmann, and Martin, forceps were introduced into the uterus, and by their means the herniation of the intestine which was present was produced. The fact has been specially pointed out by Dupluy; and Auvard (120) has insisted that perforation is not due to the curette, but to the preliminary use of separable metal dilators. Probably the passage of the curette through the uterine wall is not in itself likely to give rise to much harm unless either it or the wall is septic; but the passage of fluid from the uterus into the peritoneal cavity may give rise to serious symptoms, and of course if a loop of intestine be dragged into the uterine cavity grave results will undoubtedly follow. Sometimes perforation is only apparent, as in the cases where the uterine muscle suddenly passes from a state of contraction into one of relaxation; then the sensation given to the hand is very similar to that when the curette perforates the wall. Should grave symptoms follow a perforation one must be prepared to perform laparotomy; but, as I have already said, one ought not to embark upon a curetting without being prepared to follow it up with an abdominal section if necessity requires it. Usually, however, the packing of the uterus with iodoform gauze the moment the puncture is detected will prevent any mischief arising.

6. *Hæmorrhage*.—The danger of hæmorrhage during, or after, curetting is not great, and if it does occur it is not difficult, by packing, to apply sufficient pressure soon to stop it. Of course this is presupposing that curetting has been performed for one of its legitimate indications.

TECHNIQUE.

Preliminaries.—Too great care cannot be taken of all the preparatory arrangements in cases of curetting, and success will reward him who is most particular in these matters.

If it be possible to choose a time, the week following menstruation ought to be fixed upon, and I usually curette the day after the flow has ceased, in order to give the uterine mucosa the longest possible period to revive before the irritation of the next menstrual epoch comes on. The cases in which curettage is employed for post-abortion hæmorrhage and sepsis and for post-partum septicæmia do not come under the action of this rule.

The patient ought to be kept in bed for the day before the operation; the urine should be carefully tested; and some form of opening medicine should be given, followed by an enema on the morning of the day of curetting. The vaginal canal should be douched on the evening preceding the operation, and also in the

morning, and special attention should be paid to the thorough cleansing of the mons veneris and external genitals.

The Armamentarium.—The instruments employed will vary with the individual tastes and requirements of the operator; the following are those which I usually provide:—A vaginal speculum (Marion Sims', or a modification thereof, *e.g.* Auvard's retaining speculum), and one or two copper retractors; two or more strong-toothed volsellæ provided with clips; a set of uterine dilators, preferably Hegar's cones or Auvard's new hollow metal rods; sharp and irrigating curettes, preferably Récamier's double scoop, Thomas's spoon-saw, and Rheinstaedter's flushing curette (curetting forceps and the blunt curette I never use); a set of three or four uterine sounds, or Playfair's probes armed with cotton wool; a male catheter, No. 10; an intra-uterine douche of an approved pattern; a pair of curved packing forceps; and a sufficient number of pledgets of gauze (instead of sponges), and a long strip of iodoform gauze for packing the uterus, and another for the vagina. There ought also to be ready at hand a bottle of iodised phenol for cauterising the interior of the uterus, an anæsthetic, and antiseptic solutions (*e.g.*, perchloride of mercury, 1 in 5000). Where it is possible, the instruments ought to be of metal, and should be previously boiled for fifteen minutes in soda solution (1 to 3 per cent.).

Operator and his Assistants.—The operator ought to take the same personal precautions that he would in cases of abdominal section or hysterectomy. This is, I believe, a very important matter, especially in the cases in which curettage is performed, notwithstanding the existence of acute or chronic tubal or perimetritic conditions. He ought, therefore, to be rigorously careful with regard to the thorough cleansing of his hands, and should wear a waterproof apron and sleeves. His assistant and the nurse ought to be equally careful.

The Operation.—The patient having been chloroformed, ought to be placed in the lithotomy (dorsal) posture rather than in the left lateral, on a table, and not in bed, facing a good light. The field of operation should be protected with sterilized towels, and the hips should be raised by and rest upon a pad of antiseptic cotton covered by mackintosh. The patient may be held in position by assistants, or in default one of the many "crutches" may be used.

Before proceeding to the actual operation fifteen minutes should be definitely set aside for the thorough cleansing and disinfecting of the external genitals and vagina. The hair ought preferably to be shaven off, and the parts, both vulvar and vaginal, are to be thoroughly scrubbed with soap and water, and thereafter washed with perchloride solution (1 in 4000). Too much care cannot be taken to ensure the intra-vaginal cleansing, and pledgets of gauze (instead of sponges) in sponge-holders may be used to scrub the

walls, the fornices, and cervix. The urine should be drawn off before the operation begins.

The Sims' speculum is passed, and held in position by the assistant or nurse; then the operator lays hold of the cervix with two volsellæ, one grasping the anterior, the other the posterior lip. The use of two volsellæ distributes the traction upon the cervix better, and minimises the risk of laceration of the tissues. The uterus is then to be dragged gently downwards till the cervix is well within the range of sight and touch. Where the uterus is fixed this cannot, of course, be done, and ought not to be attempted; the cervix should then simply be fixed, and the speculum so adjusted as to give the best possible view of the parts without downward displacement. We should never attempt to introduce the curette without seeing the orifice of the cervical canal into which we are causing it to enter.

By means of a careful bimanual examination ascertain as accurately as possible the exact position and inclination of the uterus, so as to know the direction in which the dilators and curette are to be inserted. Then, having fixed the cervix, begin the dilatation. Of course, in post-partum cases this part of the process will very probably be unnecessary. Introduce first one of the smallest sizes of the Hegar dilators, which has been warmed and covered with carbolyzed vaseline. Begin, in most instances, with a No. 3 or 4, and let it pass in without the use of force, making sure always that it is being passed in the right direction. Leave it *in situ* whilst the next (larger) size is being warmed and greased, then withdraw it and introduce No. 5, and so on till No. 13 or 14 passes in easily. I have entirely given up the use of metal dilators with separate blades, for I regard them as unavoidably dangerous. The traction exercised upon the anterior and posterior lips of the cervix during dilatation should be made equal, and care should be taken that the teeth of the volsellæ do not protrude into the cervical canal. The rate of progress of the dilatation will vary in different cases according to the amount of resistance offered by the cervical tissues; but from fifteen to twenty minutes ought not to be too long to allow for the completion of this part of the operation.

The canal being now sufficiently open, it is well to dip the forefinger in an antiseptic solution and introduce it into the uterus before we pass in the curette. This is an important precautionary measure; if anything is felt in the interior of the uterus it may thus be removed by the finger alone. The curette must then be introduced; it ought to be applied in a systematic fashion, first to the anterior, then to the posterior, and then to the lateral walls of the uterus; finally, the fundus and the upper uterine angles should be scraped. The instrument should be guided in these manipulations by the operator's left hand placed on the patient's abdomen. After each scraping—which is, by the way, accompanied by a creaking or crackling sound, "*le cri utérin*"—we should withdraw

the curette and wash off its contents for future microscopic examination into a cup of water placed near at hand. In the next place, the uterine cavity should be flushed out either with an ordinary intra-uterine douche or with a flushing curette. Then iodised phenol is to be applied to the interior of the uterus on armed sounds or probes, care being taken to protect the vaginal walls during the process. By means of a pair of curved dressing forceps, firmly pack the uterine cavity with a strip of iodoform gauze about two or three feet long and one inch wide. Put a plug of the same gauze in the vaginal canal, and a pad of antiseptic absorbent wool over the vulva, and keep the whole in position with a bandage. The patient is then put back to bed and treated as after any similar operation.

Of course, the operative details will differ slightly with the condition which has constituted the indication; but the line of conduct laid down above is that which will be found most generally useful. Of the technique in some of the rarest indications I have not thought it necessary to speak.

After-treatment.—After the operation the patient is to be kept at rest. The urine may require to be drawn off the same evening; but often this is quite unnecessary. The plug is usually removed on the third or fourth day (and with it the intra-uterine strip of gauze is taken away), and a smaller one put in its place; but in the instances in which curettage has been performed for suppurative conditions the gauze may require to be changed within twelve hours, and twice daily thereafter until it comes away dry. This latter statement applies especially to the post-abortum and post-partum cases. Douching is indicated after the removal of the plug. The patient should keep her bed for a week or for ten to fourteen days in the more serious cases. She ought to rest at the next menstrual epoch, as the flow may then be excessive. When the uterus has been curetted as a measure preliminary to another operation, then the second operation may be proceeded with at once, or not till four or five days later.

Marital relations ought not to be resumed till eight weeks after the curetting. In this way conception, if it occur, is more likely to lead to a successful gestation. At the same time cases are on record in which impregnation has occurred within a month of the operation. Bossi (132) has found that the new uterine mucosa can grow a decidua twenty-five days after curettage; but it does not at all follow that the decidua thus formed will be satisfactory.

If curettage be carried out in the way above indicated, and especially if rigorous antiseptic precautions be taken during the operation and uterine drainage maintained after it, the risk will be reduced to a minimum, and the chances of complete success in properly chosen cases will be largely increased.

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